

## REPORT DOCUMENTATION PAGE

AFRL-SR-BL-TR-01-

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1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE 26 APRIL 01	3. REPORT TYPE AND DATES COVERED FINAL REPORT: 01 NOV 99 TO 15 FEB 01	
4. TITLE AND SUBTITLE AFOSR WORKSHOP ON RESEARCH AND APPLICATIONS OF ACTIVE MATERIALS AND SMART STRUCTURES			5. FUNDING NUMBERS F49620-00-100044	
6. AUTHOR(S) DIMITRIS C. LAGOUDAS MAJ. BRIAN SANDERS CHARLES CROSS STEVEN GRIFFIN EDWARD WHITE				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) AERO-SMART 2000 TEXAS A&M UNIVERSITY COLLEGE STATION, TX 77843-3141			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) AFOSR/NA 801 N. RANDOLPH STREET ARLINGTON, VA 22203			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION AVAILABILITY STATEMENT  <div style="text-align: right;"><b>AIR FORCE OFFICE OF SCIENTIFIC RESEARCH (AFOSR) NOTICE OF TRANSMITTAL DTIC. THIS TECHNICAL REPORT HAS BEEN REVIEWED AND IS APPROVED FOR PUBLIC RELEASE LAW AFR 190-12. DISTRIBUTION IS UNLIMITED.</b></div>				
13. ABSTRACT (Maximum 200 words)  The purpose of this workshop was to provide an in-depth look at the progress in active materials and smart structures with an emphasis on Air Force systems. The technology of smart structures promises a large number of potential uses and performance enhancements for air vehicles and space systems. This workshop brought together researchers from academia, the national labs, and the aerospace industry with the focus of the discussion on Air Force systems. Every effort was made to make the workshop a two-way stream and expose researchers to the problems and needs of the Air Force as well as presenting state-of-the-art research related to active materials and smart structures. Topics discussed were, among others, actuator/sensor concepts, aerodynamic control using active materials, active propulsion systems, and smart space systems.				
14. SUBJECT TERMS in-depth look at the progress in active materials and smart structures with an emphasis on Air Force systems.			15. NUMBER OF PAGES 7	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT UNCLASSIFIED	18. SECURITY CLASSIFICATION OF THIS PAGE UNCLASSIFIED	19. SECURITY CLASSIFICATION OF ABSTRACT UNCLASSIFIED	20. LIMITATION OF ABSTRACT UL	

8-15-01

NA

**Final Report on**  
**AFOSR Workshop on Research and Applications of**  
**Active Materials and Smart Structures**

**Aero-SMART 2000**  
**Texas A&M University**  
**September 20-21, 2000**

**Organized by**

**Dimitris C. Lagoudas, Texas A&M University**  
**Maj. Brian Sanders, AFRL Air Vehicles Directorate**  
**Charles Cross, AFRL Propulsion Directorate**  
**Steven Griffin, AFRL Space Directorate**  
**Edward White, The Boeing Company**

20011003 121

**April 26, 2001**

**AFOSR Grant No. F49620-00-1-044, P00001**  
**TEES Project Number 32546-83340**

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## **Workshop Objectives**

The purpose of this workshop was to provide an in-depth look at the progress in active materials and smart structures with an emphasis on Air Force systems. The technology of smart structures promises a large number of potential uses and performance enhancements for air vehicles and space systems. This workshop brought together researchers from academia, the national labs, and the aerospace industry with the focus of the discussion on Air Force systems. Every effort was made to make the workshop a two-way stream and expose researchers to the problems and needs of the Air Force as well as presenting state-of-the-art research related to active materials and smart structures. Topics discussed were, among others, actuator/sensor concepts, aerodynamic control using active materials, active propulsion systems, and smart space systems.

## **Workshop Outcome**

- Assessment of progress to date in active materials and smart structures, emphasizing Air Force relevant applications.
- Assessment of degree of readiness of various technologies for implementation into Air Force systems.
- Establishment of collaboration among faculty from academia and researchers from AFRL and industry
- Technical presentations on latest research development and trends related to sensors and actuators, aerodynamic control using active materials, active propulsion systems and smart space systems

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September 20-21, 2000

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**Aero-SMART 2000**  
 A Workshop Sponsored by the  
 Air Force Office of Scientific Research  
 September 20-21, 2000  
 Texas A&M University, College Station, TX



**Program**

*Wednesday, September 20, 2000*

	<b>Introduction / Air Vehicles / Space Systems</b>
7:30	Registration and Continental Breakfast
8:00	Brian Sanders and Dimitris Lagoudas - <i>Opening Remarks</i>
8:30	Terri Weisshaar - <i>Active Materials and Smart Structures: Their Role in the Aerospace Force</i>
9:00	Yvette Weber - <i>New Air Force Air Vehicle Systems</i>
9:30	Eric Cross - <i>Overview of Active Materials</i>
10:00	Dan Inman - <i>Overview of Control of Adaptive Structures</i>
10:30	<b>Morning Break with refreshments</b>
<b>11:00 Group Discussions</b> <b>Current Use of Active Materials / Smart Structures</b> Group 1a: Jay Kudva - <i>Use of Active Materials / Actuators / Sensors in Aerospace Applications</i> Group 1b: Edward White - <i>Air Force Related Smart Structures – Smart Systems</i>	
12:30	<b>Lunch – Speaker- Ephraim Garcia</b>
	<b>System Concepts</b>
2:00	Carlos Cesnik - <i>Active Aeroelastic Tailoring</i>
2:30	Peter Flick - <i>Aeroelastic Wing Technologies as Enablers for Smart Structures</i>
3:00	Jack Jacobs and Ed White - <i>Smart Satellites</i>
3:30	Kyle Henderson - <i>Smart Structures in Space Systems</i>
4:00	<b>Afternoon Break with refreshments</b>
<b>4:30 Group Discussions</b> <b>Current Use of Active Materials / Smart Structures</b> Group 2a: Brian Sanders - <i>Future of Active Materials and Smart Structures in Air Vehicles</i> Group 2b: Greg Agnes - <i>Future of Active Materials and Smart Structures in Space Systems</i>	
5:30	<b>Group Briefings</b>
6:00	<b>Reception and Tour of the George Bush Library and Museum</b>

Thursday, September 21, 2000

	<b>Propulsion / Materials</b>
7:30	Continental Breakfast
8:00	Sanford Fleeter – Smart Structures for Gas Turbine Engine Applications
8:30	Charles Cross – <i>USAF Gas Turbine Engine Program</i>
9:00	Jeigh Shelley – <i>Potential of Smart Structures in Rocket Propulsion</i>
9:30	Vijay Varadan – <i>Active Materials / MEMS for Space Applications</i>
10:00	Greg Carman – <i>MEMS with Active Materials</i>
10:30	<b>Morning Break with refreshments</b>
<b>11:00 Group Discussions</b> <b>Aerospace Applications / Propulsion</b> Group 3a: Charles Cross – <i>Applications of Smart Structures for Air Breathing Vehicle Propulsion</i> Group 3b: Jeigh Shelley – <i>Applications of Smart Structures for Solid Propellant Vehicle Propulsion</i>	
12:30	<b>Lunch – Speaker Vipperla Venkayya</b>
	<b>Active Materials / Smart Structures</b>
2:00	Robert McMeeking – <i>Damage Tolerance of Active Materials</i>
2:30	Robert Skelton – <i>Design and Control of Smart Structures</i>
3:00	John Junkins - <i>Adaptive Control</i>
3:30	Joseph Duffy – <i>Tensegrity Structures</i>
4:00	<b>Afternoon Break with refreshments</b>
<b>4:30 Group Discussions</b> <b>Impact of Smart Structures on Air Force Technologies</b> Group 4a: Janet Sater – <i>How far have we come and where do we go from here? (Air)</i> Group 4b: Robert Rogowski – <i>How far have we come and where do we go from here? (Space)</i>	
5:30	<b>Group Briefings</b>
7:00	<b>Banquet at Messina Hof Winery with performance by Aggie Wranglers</b>

## Call for Abstracts



# **AERO-SMART 2000**

*A Workshop Sponsored by the  
Air Force Office of Scientific Research*



**September 20-21, 2000**

***George Bush Presidential Library and Conference Center  
Texas A&M University, College Station, TX***

The purpose of this workshop is to provide an in-depth look at the progress in active materials and smart structures with an emphasis on Air Force systems. The technology of smart structures promises a large number of potential uses and performance enhancements for air vehicles and space systems. This workshop will bring together researchers from academia, the National Labs and the aerospace industry with the focus of the discussion on Air Force systems. Every effort will be made to make the workshop a two-way stream and expose researchers to the problems and needs of the Air Force as well as presenting state-of-the-art research related to active materials and smart structures. Topics to be discussed are, among others, actuator/sensor concepts, aerodynamic control using active materials, active propulsion systems, and smart space systems.

### **General Information**

The Workshop will be held at the Presidential Conference Center at Texas A&M University in College Station, Texas. It will span two and a half days with about 40 presentations in a single session format with break out sessions for round table discussions. Approximately half of the presentations will be invited, the other half will be selected from submitted abstracts.

### **Location**

College Station is located in central Texas, approximately 100 miles from Houston and Austin and 180 miles from Dallas. It is easily accessible by air from Dallas or Houston on American or Continental commuter flights. If you prefer to rent a car, College Station is less than two hours from Houston Intercontinental Airport or Austin Bergstrom Airport.

### **Lodging**

To make lodging reservations, call the Hilton Hotel at (409) 693-7500 to reserve your room at a special rate of \$60/night plus tax. To receive the special rate, you must

identify yourself as a participant in the "AFOSR" workshop and make your reservations no later than September 8, 2000. To make reservations at the Memorial Student Center (MSC) on the Texas A&M University campus, call (409) 845-8909. A special rate of \$45/night plus tax has been negotiated for lodging at the MSC. Again, you must mention the "AFOSR" workshop in order to receive this special rate.

### **Registration**

Registration for the workshop will be \$125. Registration is due by July 31, 2000. You may register by downloading a registration form from the conference web site, [cmc.tamu.edu/aerosmart2000/registration](http://cmc.tamu.edu/aerosmart2000/registration) or by calling (409) 862-4266 to request a registration form.

### **Organizing Committee**

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### **Schedule**

1 February 2000 Submission of one-page abstracts to  
due to [aerosmart2000@aero.tamu.edu](mailto:aerosmart2000@aero.tamu.edu)

1 April 2000 Notification of acceptance of abstracts –  
preliminary program

31 July 2000 Registration due

31 August 2000 Deadline for submission of presentations

The conference web site is located at  
<http://cmc.tamu.edu/aerosmart2000.html>

To register or for more information, contact:

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